Mr. Daniel Swartz
Colonial Brick Corporation
P.O. Box 365
Cayuga, Indiana 47928

Re: **165-11525**
Minor Source Modification to:
Part 70 permit No.: **T165-7633-00002**

Dear Mr. Swartz:

Colonial Brick Corporation was issued Part 70 operating permit T165-7633-00002 on January 15, 1999, for a stationary clay processing and brick manufacturing plant. An application to modify the source was received on November 3, 1999. Pursuant to 326 IAC 2-7-10.5 the following emission units are approved for construction at the source:

(a) A Periodic Brick Kiln, identified as Kiln 3, with a maximum capacity of 460.87 pounds of brick per hour.

Kiln 3 is being reconstructed to replace the original kiln which was approximately 90 years old and beyond repair/maintenance. The new kiln will be identical in size, capacity, and Btu input as the original kiln.

The reconstruction of Kiln 3 does not change any rule applicability or trigger any new rule applicability. The reconstructed Kiln 3 will have the same requirements and monitoring as the original kiln. This Minor Source Modification reviews the Prevention of Significant Deterioration (PSD) applicability of the new kiln. The only change to the Part 70 Permit will be to the descriptive information.

The following construction conditions are applicable to the proposed project:

General Construction Conditions

1. The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Management (OAM).

2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

3. Effective Date of the Permit
Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.

4. Pursuant to 326 IAC 2-1.1-9 and 326 IAC 2-7-10.5(i), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of

this approval or if construction is suspended for a continuous period of one (1) year or more.

5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.

6. Pursuant to 326 IAC 2-7-10.5(l) the emission units constructed under this approval shall not be placed into operation prior to revision of the source's Part 70 Operating Permit to incorporate the required operation conditions.

The proposed operating conditions applicable to these emission units are attached to this Source Modification approval. These proposed operating conditions shall be incorporated into the Part 70 operating permit as an administrative amendment in accordance with 326 IAC 2-7-10.5(l)(1) and 326 IAC 2-7-11.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter call (800) 451-6027, press 0 and ask for Autumn Marker or extension (3-0242), or dial (317) 233-0242.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

Attachments
AMM
cc: File - Vermillion County
U.S. EPA, Region V
Vermillion County Health Department
Air Compliance Section Inspector - Marc Goldman
Compliance Data Section - Karen Nowak
Administrative and Development - Janet Mobley
Technical Support and Modeling - Michele Boner

## SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

The Permittee owns and operates a stationary clay processing and brick manufacturing plant.

| | |
|---|---|
| Responsible Official: | Daniel A. Swartz |
| Source Address: | 817 West Park Street, Cayuga, Indiana, 47928 |
| Mailing Address: | P.O. Box 365, Cayuga, Indiana, 47928 |
| SIC Code: | 3251 |
| County Location: | Vermillion |
| County Status: | Attainment for all criteria pollutants |
| Source Status: | Part 70 Permit Program<br>Major Source, under PSD |

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

The source consists of the following permitted emission units and pollution control devices:

(a) One brick firing operation, consisting of the following equipment:

(1) Six (6) small Periodic Brick Kilns each with a rated heat input of 4 mmBtu per hour, burning a 57% coal and 43% sawdust mixture, identified as K-3, K-5, K-6, K-7, K-9 and K-10, each with a maximum capacity of 460.87 pounds of brick per hour, and exhausting through stacks S-2, S-5, S-6, S-7, S-9 and S-10, respectively (K-6 and K-9 were damaged in a flood and were repaired in 1998),

(2) Five (5) large Periodic Brick Kilns each with a rated heat input of 5 mmBtu per hour, burning a 57% coal and 43% sawdust mixture, identified as K-1, K-2, K-4, K-8 and K-11, each with a maximum capacity of 625.5 pounds of brick per hour, and exhausting through stacks S-1, S-1, S-2, S-4 and S-6, respectively (K-4 was damaged in a flood and was repaired in 1998), and

**(3) A Periodic Brick Kiln, identified as Kiln 3, with a maximum capacity of 460.87 pounds of brick per hour.**

**Kiln 3 is being reconstructed to replace the original kiln which was approximately 90 years old and beyond repair/maintenance. The new kiln will be identical in size, capacity, and Btu input as the original kiln.**

(b) One (1) grinder operation, operating within the grinder building, which has no exhaust, consisting of the following equipment:

(1) One (1) Cayuga Brick Clay Grinder, identified as UV-9, with a maximum capacity of 12.8 tons of raw clay per hour,

(2) One (1) Maco Apron conveyer, with a maximum capacity of 15 tons of raw clay per hour, operating within the grinder building, which has no exhaust,

(3) One (1) shop built apron conveyor, with a maximum capacity of 15 tons of raw clay per hour,

(2) One (1) McClanahan Single Roll 24" x 36" crusher, with a maximum capacity of 20 tons of raw clay per hour,

## SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)] One brick firing operation, consisting of the following equipment:

(1) Six (6) small Periodic Brick Kilns each with a rated heat input of 4 mmBtu per hour, burning a 57% coal and 43% sawdust mixture, identified as K-3, K-5, K-6, K-7, K-9 and K-10, each with a maximum capacity of 460.87 pounds of brick per hour, and exhausting through stacks S-2, S-5, S-6, S-7, S-9 and S-10, respectively (K-6 and K-9 were damaged in a flood and were repaired in 1998), and

(2) Five (5) large Periodic Brick Kilns each with a rated heat input of 5 mmBtu per hour, burning a 57% coal and 43% sawdust mixture, identified as K-1, K-2, K-4, K-8 and K-11, each with a maximum capacity of 625.5 pounds of brick per hour, and exhausting through stacks S-1, S-1, S-2, S-4 and S-6, respectively (K-4 was damaged in a flood and was repaired in 1998).

**(3) A Periodic Brick Kiln, identified as Kiln 3, with a maximum capacity of 460.87 pounds of brick per hour.**

**Kiln 3 is being reconstructed to replace the original kiln which was approximately 90 years old and beyond repair/maintenance. The new kiln will be identical in size, capacity, and Btu input as the original kiln.**

### Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.1.1 Sulfur Dioxide ($SO_2$) [326 IAC 7-1.1-1]

Pursuant to 326 IAC 7-1.1-1 (Sulfur Dioxide Emissions Limitations):

(a) The $SO_2$ emissions from the six (6) small periodic brick kilns (ID K-3, K-5, K-6, K-7, K-9 and K-10) and the five (5) large periodic brick kilns (ID K-1, K-2, K-4, K-8 and K-11) shall not exceed six (6) pounds per mmBtu of coal combustion.

(b) The sulfur content of the coal delivered to the six (6) small periodic brick kilns (ID K-3, K-5, K-6, K-7, K-9 and K-10) and the five (5) large periodic brick kilns (ID K-1, K-2, K-4, K-8 and K-11) shall not exceed 4.12% by weight, providing the fuel mixture remains 57% coal and 43% sawdust.

D.1.2 Particulate Emission Limitations [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2 (Process Operations):

(a) The allowable PM emission rate from each of the six (6) small periodic brick kilns (ID K-3, K-5, K-6, K-7, K-9 and K-10) shall not exceed 1.53 pounds per hour when each operating at a process weight rate of 460.87 pounds per hour.

(b) The allowable PM emission rate from each of the five (5) large periodic brick kilns (ID K-1, K-2, K-4, K-8 and K-11) shall not exceed 1.88 pounds per hour when each operating at a process weight rate of 625.5 pounds per hour.

The pound per hour limitation was calculated with the following equation:

Interpolation and extrapolation of the data for the process weight rate up to 60,000 pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour; and P = process weight rate in tons per hour

D.1.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and its control device.

# Indiana Department of Environmental Management
# Office of Air Management

## Technical Support Document (TSD) for a Part 70 Minor Source Modification

### Source Background and Description

| | |
|---|---|
| **Source Name:** | **Colonial Brick Corporation** |
| **Source Location:** | **817 West Park Street, Cayuga, Indiana 47928** |
| **County:** | **Vermillion County** |
| **SIC Code:** | **3251** |
| **Operation Permit No.:** | **T165-7633-00002** |
| **Operation Permit Issuance Date:** | **January 15, 1999** |
| **Minor Source Modification No.:** | **165-11525-00002** |
| **Permit Reviewer:** | **Autumn M. Marker** |

The Office of Air Management (OAM) has reviewed a modification application from Colonial Brick Corporation relating to the construction of the following emission units and pollution control devices:

(a) A Periodic Brick Kiln, identified as Kiln 3, with a maximum capacity of 460.87 pounds of brick per hour.

Kiln 3 is being reconstructed to replace the original kiln which was approximately 90 years old and beyond repair/maintenance. The new kiln will be identical in size, capacity, and Btu input as the original kiln.

The reconstruction of Kiln 3 does not change any rule applicability or trigger any new rule applicability. The reconstructed Kiln 3 will have the same requirements and monitoring as the original kiln. This Minor Source Modification reviews the Prevention of Significant Deterioration (PSD) applicability of the new kiln. The only change to the Part 70 Permit will be to the descriptive information.

### History

On November 3, 1999, Colonial Brick Corporation submitted an application to the OAM requesting to reconstruct Kiln 3 at their existing plant. Colonial Brick Corporation was issued a Part 70 permit on December 14, 1998.

### Enforcement Issue

There are no enforcement actions pending.

### Recommendation

The staff recommends to the Commissioner that the Part 70 Minor Source Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and

additional information submitted by the applicant.

An application for the purposes of this review was received on November 3, 1999.

**Emission Calculations**

See Appendix A of this document for detailed emissions calculations*.*

**Potential To Emit of Modification**

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA."

This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

| Pollutant | Potential To Emit (tons/year) |
|---|---|
| PM | 1.44 |
| PM-10 | 1.25 |
| $SO_2$ | 20.88 |
| VOC | 0.04 |
| CO | 0.61 |
| $NO_x$ | 6.29 |

**Justification for Modification**

The Part 70 Operating permit is being modified through a Part 70 Minor Source Modification. This modification is being performed pursuant to 326 IAC 2-7-10.5(d)(4), modifications that have the potential to emit sulfur dioxide less than twenty-five tons per year.

**County Attainment Status**

The source is located in Vermillion County.

| Pollutant | Status |
|---|---|
| PM-10 | attainment |
| $SO_2$ | attainment |
| $NO_2$ | attainment |
| Ozone | attainment |
| CO | attainment |
| Lead | attainment |

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC and $NO_X$ emissions are considered when evaluating the rule applicability relating to the ozone standards. Vermillion County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Vermillion County has been classified as attainment or unclassifiable for all pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

**Source Status**

Existing Source PSD or Emission Offset Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

| Pollutant | Emissions (tons/year) |
|---|---|
| PM | 129.04 |
| PM-10 | 101.01 |
| $SO_2$ | 222.18 |
| VOC | 0.04 |
| CO | 3.43 |
| NOx | 82.14 |

(a) This existing source is a major stationary source because the source had the potential to emit an attainment regulated pollutant at a rate of 250 tons per year or more, and it is not one of the 28 listed source categories. The source has an issued Part 70 permit, therefore, the control equipment at the facility is federally enforceable. The numbers listed in the table above reflect the potential emissions after controls. Prior to issuance of the Part 70 permit the source had the potential to emit PM and $PM_{10}$ at a rate greater than 250 tons per year.

(b) These emissions are based upon emissions calculations in Part 70 Permit No. T165-7633-00002.

**Potential to Emit of Modification After Issuance**

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Part 70 source modification.

| | Potential to Emit (tons/year) | | | | | | |
|---|---|---|---|---|---|---|---|
| Process/facility | PM | PM-10 | $SO_2$ | VOC | CO | $NO_X$ | HAPs |
| Kiln 3 | 1.44 | 1.25 | 20.88 | 0.04 | 0.61 | 6.29 | -- |
| PSD Significance Levels | 25 | 15 | 40 | 40 | 100 | 40 | – |

This modification to an existing major stationary source is not major because the emissions increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

**Federal Rule Applicability**

(a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this proposed modification.

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this proposed modification.

**State Rule Applicability - Individual Facilities**

326 IAC 2-2 (Prevention of Significant Deterioration (PSD))

This source is a major source under 326 IAC 2-2 (PSD). Emissions from the reconstruction of Kiln 3 are below the PSD significance thresholds, therefore, the requirements of 326 IAC 2-2 (PSD) are not applicable.

326 IAC 6-3-2 (Process Operations)

Pursuant to 326 IAC 6-3-2 (Process Operations), the particulate matter (PM) from Kiln 3 shall not exceed 1.5 pounds per hour when operating at a process weight rate of 460.87 pounds per hour.

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$E = 4.10\ P^{0.67}$ where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

Based on calculations, Kiln 3 is in compliance with this requirement.

326 IAC 7-1.1-1 (Sulfur Dioxide Emission Limitations)

Pursuant to 326 IAC 7-1.1-2(a)(1) (Sulfur Dioxide Emission Limitations) the sulfur dioxide emissions from Kiln 3 burning a coal and sawdust mixture shall be limited to 6.0 pounds per million Btu of coal. Therefore, the sulfur dioxide ($SO_2$) content of coal delivered to the kiln shall be limited to four and six fiftieths percent (4.12%) by weight .

Kiln 3 has a potential to emit $SO_2$ of 1.18 pounds per mmBtu. Based on calculations Kiln 3 is in compliance with this requirement.

326 IAC 7-2-1 (Sulfur Dioxide Emission Limitations)

Pursuant to 326 IAC 7-2-1 (Reporting Requirements), the source shall submit to the commissioner upon request: calendar month of average sulfur content, heat content, fuel consumption, and sulfur dioxide emission rate in pounds per million Btu.

**Compliance Requirements**

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAM, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements applicable to this modification are as follows:

1. The kiln operation has applicable compliance monitoring conditions as specified below:

(a) Visible emissions notations of the kiln stack exhaust shall be performed during normal daylight operations on days 2, 3, and 4 of the firing cycle when exhausting to the atmosphere. A trained employee will record whether emissions are normal or abnormal when exhausting to the atmosphere. For processes operated continuously "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time. In the case of batch or discontinuous operations, readings shall be taken during days 2, 3, and 4 of the firing cycle. A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process. The compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.

These monitoring conditions are necessary because the kiln must operate properly to ensure compliance with 326 IAC 6-3-2 (Process Operations) and 326 IAC 2-7 (Part 70).

**Conclusion**

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Minor Source Modification No. 165-11525-00002.

# Appendix A

Appendix A: Emission Calculations

Company Name: Colonial Brick Corporation
Plant Location: 817 West Park Street, Cayuga, Indiana 47928
County: Vermillion County
Permit Reviewer: Autumn M. Marker
OP #: 165-11642-00002
Plt. ID #: 165-00002

**Emissions from brick**

| Process: | Rate (tons clay/hr) | Pollutant | Ef (lb/ton produced) | Eac (ton/yr) |
|---|---|---|---|---|
| **Periodic Kilns** | 0.23 | PM | 0.410 | 0.41 |
| | | PM-10 | 0.220 | 0.22 |
| | | SO2 | 7.200 | 7.25 |
| | | NOx | 0.000 | 0.00 |
| | | CO | 0.240 | 0.24 |
| | | VOC | 0.000 | 0.00 |

*Allowable Emissions:*

The following calculations determine PM compliance with 326 IAC 6-3-2 for process weight rates less than 30 tons per hour:

P= 0.23 tons/hr

limit = 4.1 x ( 0.23 ^0.67 ) = 1.5 lb/hr (allowable)

with potential:

0.4 tons/yr x 2000 lb/ton / 8760 hr/yr = 0.1 lb/hr (will comply)

**Emissions from kiln fuel**

| Process: | Rate (tons coal/hr) | Pollutant | Ef (lb/ton produced) | Eac (ton/yr) |
|---|---|---|---|---|
| **Periodic Kilns** | 0.14 | PM | 1.670 | 1.02 |
| | | PM-10 | 1.670 | 1.02 |
| | | SO2 | 22.230 | 13.63 |
| | | NOx | 10.260 | 6.29 |
| | | CO | 0.600 | 0.37 |
| | | VOC | 0.070 | 0.04 |

**Emissions from brick and kiln fuel**

| | Eac (ton/yr) | | Eac (ton/yr) | | Total (ton/yr) | | PSD Sig thresholds |
|---|---|---|---|---|---|---|---|
| PM | 0.41 | PM | 1.02 | PM | 1.44 | PM | 25.00 |
| PM-10 | 0.22 | PM-10 | 1.02 | PM-10 | 1.25 | PM-10 | 15.00 |
| SO2 | 7.25 | SO2 | 13.63 | SO2 | 20.88 | SO2 | 40.00 |
| NOx | 0.00 | NOx | 6.29 | NOx | 6.29 | NOx | 40.00 |
| CO | 0.24 | CO | 0.37 | CO | 0.61 | CO | 100.00 |
| VOC | 0.00 | VOC | 0.04 | VOC | 0.04 | VOC | 40.00 |
| | Emissions from brick | | Emissions from kiln fuel | | Total kiln emissions | | |

The emissions from the reconstruction of kiln 3 are below the PSD significance thresholds. Therefore, the requirements of 326 IAC 2-2 are not applicable.

Methodology:
Emission and control factors based on stack test data submitted by the applicant.
tons/year = average emissions in lb/ton * maximum rate tons/year * 1 ton/2000lbs
Total emissions based on rated capacity at 8,760 hours/year, before control.